

REMARKS

In the outstanding Office Action, Claims 1, 3-7, 16-18, 25-27, 29, and 30 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,766,225 to Kramm. Claims 1, 2, 7-9, 11-13, 18, 22, 23, and 25-30 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,278,894 to Salo et al. Claims 14-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Salo et al. Claims 3, 6, 10, and 19-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Salo et al. in view of U.S. Patent Number 5,476,485 to Weinberg et al. Reconsideration is respectfully requested in light of the above claim amendments and the following remarks.

Claims 1, 18, and 27, as amended, are directed to a method and corresponding system that provides biventricular pacing to capture both the right and left ventricles. According to the method, biventricular pacing is achieved by delivering a single pacing pulse in a cross-chamber configuration between an electrode associated with the left ventricle and an electrode in the right ventricle, which results in the synchronous capture of both ventricles. In other words, using an electrode configuration that includes an electrode in the right ventricle and an electrode on the left side of the heart, the claimed invention achieves simultaneous, biventricular capture with a single pacing pulse.

The Examiner rejected Applicant's claims based on the Kramm patent, which incorporates by reference U.S. Patent Number 4,932,407 to Williams. The Kramm patent briefly mentions pacing, but does not disclose any specifics about how it paces the heart. Kramm simply teaches that "If the brady escape interval has timed out, a pace pulse is delivered as illustrated at 68." (Col. 5, lines 63-64). Nowhere does Kramm discuss or even mention biventricular pacing. Kramm only discloses the use of pacing to differentiate between sustained and non-sustained arrhythmias. Obviously this has nothing to do with biventricular pacing.

Kramm incorporates by reference the Williams patent because Williams discloses a lead that may be used with Kramm's defibrillator (Col. 3, lines 7-9). According to the Examiner, Williams discloses a system that performs synchronous

biventricular stimulation. However, what Williams in fact discloses is a defibrillati n system that delivers defibrillation shocks betwe n electrodes in the right ventricle and electrodes adjacent the left v ntricle. Thus, the system disclosed by Williams is not intended for biventricular pacing, or any pacing for that matter.

Thus, neither Kramm nor Williams disclose a system that performs biventricular pacing. Furthermore, neither patent discloses a system that achieves biventricular pacing by means of a single pacing pulse delivered in a cross-chamber manner. Williams discloses a system for defibrillating a heart, and therefore one would not be motivated to modify Williams to deliver biventricular pacing pulses. Therefore, even in combination, Kramm and Williams do not teach Applicant's claimed invention that achieves biventricular pacing with a single pacing pulse. At best, the combination of Kramm and Williams teach a system that paces in one chamber and verifies capture of that one chamber, and that then delivers a defibrillation shock between right and left ventricular electrodes if capture did not occur. However, neither reference, whether taken alone or in combination, teaches a system that 1) performs biventricular pacing, and 2) achieves biventricular pacing by means of a single pacing pulse delivered in a cross-chamber manner.

Moreover, Applicant's claimed system and method verify capture of both ventricles, whereas the Kramm patent only verifies capture of a single chamber, because only one chamber is being paced by Kramm's system. Williams of course does not teach or in any way mention capture verification, because Williams is concerned with defibrillation, not pacing. Thus, neither reference teaches or in any way suggests a system that verifies capture of both ventricles, because neither reference is concerned with biventricular pacing.

The Salo et al. patent is directed to a system that measures impedance by delivering AC signals between right and left ventricular leads. However, Salo et al. specifically teach that the system "produce[s] an AC carrier signal on lines 46 whose amplitude is below that which is required to evoke capture (depolarization) of the heart and whose frequency may be typically 5-10 KHz." (Col. 4, lines 23-26). Thus, Salo et al. is not concerned with pacing, and in fact specifically excludes pacing.

REJECTIONS UNDER 35 U.S.C. §103

Claims 14-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Salo et al. Claims 3, 6, 10, and 19-21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Salo et al. in view of U.S. Patent Number 5,476,485 to Weinberg et al.

As described above, Salo et al. fail to teach or suggest a method of biventricular pacing that delivers a single pacing pulse in a cross-chamber configuration between the right and left ventricles to synchronously capture both ventricles. Likewise, Weinberg et al. fail to teach or suggest delivering a single pacing pulse between an electrode in the right ventricle and an electrode associated with the left ventricle. Therefore, the prior art, whether taken alone or in combination, fails to teach applicant's claimed invention.

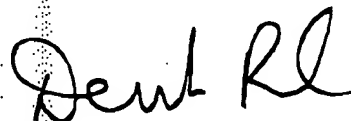
CONCLUSION

In light of the above remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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Date



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